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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,378	04/15/2004	Noam Goldberg	GOLDBERG3	6625

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EXAMINER	
PHAN, MAN U	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/824,378	GOLDBERG ET AL.	
	Examiner	Art Unit	
	Man Phan	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,8-14,16,17 and 19-25* is/are rejected.

7)☒ Claim(s) *2,5-7,15 and 18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/15/04, 11/18/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The application of Goldberg et al. for the "Technology for improving STP protocols in Ethernet networks supporting VLANs" filed 04/15/2004 has been examined. This application claims foreign priority based on the application 155449 filed May 15, 2003 in Israel. Receipt is acknowledged of papers submitted under 35 U.S.C 119(a) – (d), which papers have been placed of record in the file. Claims 1-25 are pending in the present application.

2. The applicant should use this period for response to thoroughly and very closely proof read and review the whole of the application for correct correlation between reference numerals in the textual portion of the Specification and Drawings along with any minor spelling errors, general typographical errors, accuracy, assurance of proper use for Trademarks ™, and other legal symbols @, where required, and clarity of meaning in the Specification, Drawings, and specifically the claims (i.e., provide proper antecedent basis for "the" and "said" within each claim). Minor typographical errors could render a Patent unenforceable and so the applicant is strongly encouraged to aid in this endeavor.

Claim Objections

3. Applicant is advised that claim 11 is missing from the set of claims. Appropriate correction is required.

4. Claims 12, 13 and 24, 25 are objected to because of the following informalities: The claims contain the phrase *"capable of"*. It has been held that the recitation that an element is "*capable of*" perform a function is not a positive limitation but only requires the ability to so perform. It

does not constitute a limitation in any patentable sense. *In re Hutchison, 69 USPQ 138.*

Appropriate correction is required.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 9, 10, 12 and 22, 23, 24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter, specifically, as directed to "computer program product" or "a software routine". The claimed "A program product" or "software routine" of claims 9, 10 and 22, 23 are non-statutory as at no time in the claims does applicant define the software routine. A program readable storage medium per se is not in one of the statutory categories. A program product must be claimed in combination with an appropriate computer readable storage medium so that the program is capable of producing a useful, concrete and tangible result when used in a computer system.

Claims 9, 10, 12 and 22, 23, 24 are direct to "*a software product*" and "*a carrier medium*" which is not supported by either a specific asserted utility or a well established utility. The claims merely defines "*a program readable storage medium*" or "*data record for storing instructions*" for carrying out the method claims 1 and 14 respectively, and is not directed to statutory subject matter. The claims appear to be nothing more than a signal not tangibly embodied in a manner so as to be executable and thus non-statutory for failing to be in one of the categories of invention. It's not tangibly embodies and non-functional descriptive material - data per se. Therefore, what applicant is attempting to claim as a software program product or data

record as is known in the art. The claim is actually drawn to non-functional descriptive material stored on a machine readable medium. The description given in the specification does not cure this problem. In practical terms, claims define non-statutory processes if they simply manipulate abstract ideas, e.g., a bid or a bubble hierarchy, without some claimed practical application, Schrader, 22 F.3d at 293-94, 30 USPQ2d at 1458-59; Warmerdam, 33 F.3d at 1360, 31 USPQ2d at 1759.

7. Claims 9, 10, 12 and 22, 23, 24 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1, 3, 4, 8, 13 and 14, 16, 17, 19-21, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Di Benedetto et al. (US#6,937,576) in view of Jain (US#6,697,339).

With respect to claims 1, 13 and 14, 25, the references disclose a novel system and method for configuring a spanning tree is used for a network, according to the essential features of the claims. Di Benedetto et al. (US#6,937,576) discloses in Fig 2 a block diagram illustrated a partially meshed computer network 200 comprises a plurality of local area networks (LANs) 202-214 and servers 216, such as file servers, print servers, etc., interconnected by a plurality of intermediate devices, such as switches 218-227. Those ports of switches 218-227 and routers 228, 230 coupled to links 232 are similarly associated with one or more VLAN designation(s). The VLAN designations associated with these ports preferably correspond to the VLANs that are reachable through that port. For example, switch 223 may associate its port coupled to switch 227 via link 232 with at least the red VLAN designation to provide connectivity to LAN 212 which is associated with the red VLAN designation. In accordance with these protocols, each switch 218-227 and router 228, 230 transmits predefined advertisements containing information regarding the current VLAN configuration at the sourcing device. By listening for the advertisements, devices may learn of any reconfiguration of the network 200, including the deletion of an existing VLAN or changes to the membership of an existing VLAN. Thus, the current association of VLAN designations may be quickly propagated to all intermediate devices. Once the VLAN designations within network 200 have been established, any entity associated with a given VLAN designation (e.g., red) may exchange messages with any other

similarly designated entity, even though the two entities may be physically remote from each other and interconnected by switches that are coupled to other VLANs. Inter-VLAN traffic (e.g., communication from a "red" designated entity to a "blue" designated entity), if permitted, is preferably performed only by the routers 228, 230, which can generally implement higher level functionality that switches 218-227. Execution of the spanning tree algorithm will prevent loops by defining a loop-free network topology (i.e., an active topology). As set forth above, however, current implementations of the spanning tree algorithm are limited to either a single loop-free topology which precludes load balancing of network traffic or a separate loop-free topology for every VLAN designation which may result in the consumption of substantial communications bandwidth and processor resources. To avoid these disadvantages and to improve the efficient distribution of messages throughout the network 200, among other reasons, at least some of the intermediate network devices (e.g., the switches, bridges, etc.) of network 200 execute a Multiple Instance Spanning Tree Protocol (MI-STP) in accordance with the present invention (Col. 2, lines 7 plus and Col. 6, lines 63 plus).

In the same field of endeavor, Jain (US#6,697,339) teaches the claimed method of managing a plurality of ports according to a spanning tree algorithm. Jain further teaches an improvement to the spanning tree protocol which provides for identifying a port on the bridge in the alternate port role which qualifies as a candidate root port. Upon the receipt of changed path cost information, or other events causing a selection of a new root port, the candidate root port transitions to the root port role and forwarding state immediately, without traversing the listening and learning states of the standard protocol and without requiring satisfaction of the conditions of such transitional states. Also, the previously root port may transition into the designated port role

without wait states, which allows rapid, loop-free convergence of the spanning tree. Jain provides the mechanisms to identify alternate ports, termed "candidate root ports" herein, that are candidates for becoming the root ports in the event of a topology change. Not all of the alternate ports on a bridge can serve as the root port in an arbitrary spanning topology. Because some alternate ports are connected to segments that might lead to loops, such loops result in the "counting to infinity" problem as is well known in the routing world (Routing Information Protocol or "RIP"). Methods are provided to identify ports in a candidate root role alternate ports that lead to loop-free alternate paths to the root bridge. When a root port selection process causes the root port on a bridge to change, one of the selected candidate root ports (the one with the least root path cost) can be selected as the root port and the modified spanning tree algorithms speed up the convergence and reduce address learning. According to Jain's present invention, qualification as a suitable candidate root port is based upon propagating a message from the root bridge, such as a bridge protocol data unit ("BPDU") message, carrying the identifier of the port on the root bridge from which the message originates. For the standard spanning tree protocol, the port identifier from the root bridge is provided in addition to the identifier of the port of the bridge from which the BPDU is received. Logic in the bridges is able to identify the branch of the tree from which the message originates, and to select the candidate root port in response to the branch information. Thus, a port on a different branch than the root is a suitable candidate root port. A port on the same branch as the root is suitable if it has recently received (such as within one Hello time in the standard spanning tree) updated configuration information from its upstream bridge (designated bridge on the port), such as by a configuration BPDU. If it has not received recent configuration information, then the alternate port can provoke a new BPDU, such

as by sending inferior information on the affected segment which causes the upstream bridge to respond with better information (Col. 4, lines 46 plus).

Regarding claims 3-4 and 16-17, Jain further teaches that when a bridged network is established, it is possible to create loops in the network by providing more than one path through bridges and LAN segments between two points. Thus, according to the 802.1D standard, an active topology for the bridged network is maintained according to the spanning tree protocol. The spanning tree protocol automatically establishes a fully connected (spanning) and a loop-free (tree) bridged network topology (Col. 1, lines 56 plus); and wherein the new STP topology is a changed STP topology in the Ethernet network (Col. 2, lines 23 plus).

Regarding claims 8 and 21, Di Benedetto further teaches a method of creating multiple spanning trees within a computer network, in which upon detection of a change in the active topology, a bridge begins transmitting Topology Change Notification Protocol Data Unit (TCN-PDU) messages on its root port. The format of the TCN-PDU message is well known (see IEEE 802.1D standard).

One skilled in the art of communications would recognize the need for utilizing a spanning tree protocol (STP) in an Ethernet network, and would apply Jain's teaching of the identifying a port on the bridge in the alternate port role into Di Benedetto's novel use of the STP for defining multiple instances of loop-free paths within a computer network. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Jain's high availability spanning tree with rapid reconfiguration with alternate port selection into Di Benedatto's multiple instance spanning tree protocol with the motivation being

to provide a system and method for improving STP protocols in Ethernet networks supporting VLANs.

Allowable Subject Matter

11. Claims 2, 5-7 and 15, 18 are objected to as being dependent upon the rejected base claims, but would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

12. The following is an examiner's statement of reasons for the indication of allowable subject matter: The closest prior art of record fails to disclose or suggest wherein comprising the following steps to be performed at each Ethernet switching node that is active in the new STP topology and with respect to each of said one or more VLANs: a) ensuring that ports of the Ethernet switching node that is active in the new STP topology, are assigned to said one or more VLANs according to an initial VLANs configuration; b) counting forwarding ports assigned to a particular VLAN, being active according to the new STP topology; c) if a port assigned to a particular VLAN is a single forwarding port for said particular VLAN at said node, de-activating said port with respect to said VLAN, thereby pruning said VLAN at said port and said node; d) generating a de-activation message from each said single forwarding port of said node, the message indicating one or more VLANs de-activated at said port, and transmitting said de-activation message to a neighbor Ethernet switching node in the new STP topology; e) de-activating the port of the neighbor Ethernet switch, that has received said de-activation message, with respect to said one or more VLANs indicated in the message; f) repeating steps (b) to (e) at said neighbor node, as specifically recited in the claims.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The Yang et al. (US#7,126,923) is cited to show the method and system for inter-domain loop protection using a hierarchy of loop resolving protocols.

The Higasiyama (US#2004/0190454) is cited to show the mesh network bridges making operable spanning tree protocol and line fault backup protocol in optimized forwarding environment.

The Di Benedetto et al. (US#6,898,189) is cited to show the rstartable spanning tree for high availability network systems.

The Gai et al. (US#6,678,241) is cited to show the fast convergence with topology switching.

The Lau et al. (US#6,934,262) is cited to show the method and apparatus for restricting the assignment of VLANs.

The Potolani et al. (US#7,061,875) is cited to show the spanning tree loop guard.

The Di Benedettoet al. (US#6,987,740) is cited to show the STP root guard.

The Seaman (US#6,882,630) is cited to show the spanning tree with rapid propagation of topology changes.

The Seaman (US#6,934,263) is cited to show the spanning tree with protocol for bypassing port state transition timers.

The Lui et al. (US#7,027,453) is cited to show the spanning tree alternate routing bridge protocol.

The Silvest et al. (US#6,954,437) is cited to show the method and apparatus for avoiding transient loops during network topology adoption.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Phan whose telephone number is (571) 272-3149. The examiner can normally be reached on Mon - Fri from 6:00 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel, can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at toll free 1-866-217-9197.

Mphan

09/06/2007.

MAN U. PHAN
PRIMARY EXAMINER